



DEPARTMENT OF PUBLIC UTILITIES SAFETY POLICY MEMORANDUM

POLICY NUMBER: 25	DATE: April 17, 2002
TITLE: Process Safety Management	APPROVED BY: Martin McIntyre

PURPOSE

To establish guidelines for preventing or minimizing the consequences of inadvertent releases of chemicals.

To establish process safety management procedures to eliminate a substantial degree, the risks to which employees are exposed to chemical hazards.

POLICY

Each Division should develop and maintain written safety information to enable the City and the employees operating the process to identify and understand the hazards posed by processes involving the use of chemicals.

Each Division should provide for employee participation in the development of process safety information and copies of this safety information should be made accessible and communicated to employees involved in the process [8CCR5189(d)].

EMPLOYEE INFORMATION REQUIREMENTS

Information pertaining to hazards involved in the process. This information should consist of at least the following:

Toxicity information

Permissible exposure limits

Physical data

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Corrosive data

Thermal and chemical stability data

Reactivity data

Hazardous effects of incompatible mixtures which could foreseeably occur

Personal protective equipment requirements

NOTE: Material Safety Data Sheets meeting the requirements may be used to comply with this requirement to the extent they meet the information provisions.

Information pertaining to the technology of the process. This should include at least the following:

A block flow diagram or simplified process flow diagram

Process chemistry

Maximum intended inventory

Safe upper and lower limits for process variables such as temperatures, pressures, flows, levels, and/or compositions

The consequences of deviations, including those affecting the safety and health of employees

Information pertaining to the equipment in the process.

Information pertaining to the equipment in the process should include at least the following:

Materials of construction

Piping and instrument diagrams

Electrical classification

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Relief system design and design basis

Ventilation system design

Design codes employed including design conditions and operating limits

Material and energy balances for processes built after September 1, 1992

Safety systems (such as interlocks, detection and suppression systems, etc.)

Electrical supply and distribution systems

The Division should document that the equipment complies with criteria in accordance with recognized and generally accepted good engineering practices.

For existing equipment designed and constructed in accordance with codes, standards, or practices that are no longer in general use, the Division should determine and document that the equipment is designed, maintained, inspected, tested and operating in a safe manner.

PROCESS HAZARD ANALYSIS

Each Division should perform a hazard analysis appropriate to the complexity of the process for identifying, evaluating, and controlling hazards involved in the process and should determine and document the priority order for conducting process hazard analyses based on the extent of process hazards, number of potentially affected employees, age of the process and process operating history, using at least one of the following methodologies:

What-If Checklist

Hazard and Operability Study

Failure Mode and Effects Analysis

Fault-Tree Analysis

The hazard analysis should address:

The hazards of the process

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Engineering and administrative controls applicable to the hazards and their relationships

Consequences of failure of these controls

Facility setting

Human factors

A qualitative evaluation of a range of the possible safety and health effects of the failure of controls on facility employees

The identification of any previous incident which had a likely potential for catastrophic consequences in the workplace

The process hazard analysis should be performed by a team with expertise in engineering and process operations, and the team should include at least one operating employee who has experience and knowledge specific to the process being evaluated. The team should also include one member knowledgeable in the specific process hazards analysis methodology being used. The final report containing the results of the hazard analysis for each process should be available in the respective work area for review by any person in that area.

The Division should consult with the affected employees and, where appropriate, their recognized representative on the development and conduct of hazard assessments performed. Affected employees and where applicable their representative should be provided access to the records required by this policy.

The Division should establish a system to address the team's findings and recommendations promptly; document any actions taken to implement the team's recommendations; develop a written schedule of when these actions are to be completed; assure that the recommendations are resolved in a timely manner; make them available to operating, maintenance and any other persons whose work assignments are in the facility, and who are affected by the recommendations or actions; and assure that the recommendations are evaluated in a timely manner or implement an alternative resolution which appropriately addresses the degree of hazard posed by the scenario.

At least every five (5) years, the process hazard analysis should be updated and reevaluated by a team meeting the requirements above to assure that the process hazard analysis is consistent with the current process.

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Divisions should retain permanently process hazard analyses and/or updates for each process covered, as well as the documented actions described above.

OPERATING PROCEDURES

The Division should develop and implement written procedures that provide clear instructions for safely conducting activities involved in each process consistent with the process safety information and should address at least the following:

Steps for each operating phase

Start-up

Normal operation

Temporary operations as the need arises

Emergency operations, including emergency shutdowns, and who may initiate these procedures

Start-up following a turnaround, or after emergency shutdown

Operating limits

Consequences of deviation

Steps required to correct and/or avoid deviation

Safety systems and their functions

Safety and health considerations

Properties of, and hazards presented by, the chemicals used in the process

Precautions necessary to prevent exposure, including administrative controls, engineering controls, and personal protective equipment

Control measures to be taken if physical contact or airborne exposure occurs

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Safety procedures for opening process equipment (such as pipeline breaking)

Verification of raw materials and control of hazardous chemical inventory levels

Any special or unique hazards

A copy of the operating procedures should be readily accessible to employees who work in or near the process area, or to any other person who works in or near the process area

The operating procedures should be reviewed as often as necessary, but at least every five years, to assure that they reflect safe operating practices, including changes that result from changes in process chemicals, technology, equipment and facilities.

The Division should develop and implement safe work practices to provide for the control of hazards during operations such as opening process equipment or piping and control over entrance into a facility by maintenance, contractor, laboratory or other support personnel. The safe work practices should apply to City employees, as well as employees of contractors.

TRAINING

Initial training. Each employee presently involved in operating or maintaining a process, and each employee before working in a newly assigned process, should be trained in an overview of the process and in the operating procedures. The training should include emphasis on the specific safety and health hazards, procedures, and safe practices applicable to the employee's job tasks.

Refresher and supplemental training. At least every three years, and more often if necessary, refresher and supplemental training should be provided to each maintenance and operating employee and other workers necessary to ensure safe operation of the facility. The Division, in consultation with employees involved in operation or maintenance of a process, should determine the appropriate frequency of refresher training.

Training certification. The Division should ensure that each employee involved in the operation or maintenance of a process has received and successfully completed training. The Division, after the initial or refresher training should prepare a certification record which contains the identity of the employee, the date of training, and the signatures of the persons administering the training.

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Testing procedures should be established by each Division to ensure competency in job skill levels, as well as safe and healthy work practices.

CONTRACTORS

The Division should inform contractors performing work on or near a process of the known potential fire, explosion or toxic release hazards related to the contractor's work and the process, and require that contractors have trained their employees to a level to perform their job safely. The Division should also inform contractors of any applicable safety rules of the facility, and assure that the contractors have so informed their employees.

The Division should explain to contractors the provisions of the emergency action plan.

The Division when selecting a contractor should obtain and evaluate information regarding the contract employer's safety program.

The Division should periodically evaluate the performance of contract employers in fulfilling their obligations.

The Division should obtain and make available upon request a copy of the contract employer's injury and illness log related to the contractor's work in the process area.

PRE-START UP SAFETY REVIEW

The Division should perform a pre-start-up safety review for new facilities and for modified facilities for which the modification necessitates a change in the process safety information.

The pre-start-up safety review should confirm that prior to introduction of materials to a process:

- Construction and/or equipment are in accordance with design specifications

- Safety, operating, maintenance, and emergency procedures are in place and are adequate

- For new facilities, a process hazard analysis has been performed and recommendations have been resolved or implemented before start-up; and modified facilities meet the requirements contained above.

- Training of each operating employee and maintenance worker has been completed

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The Pre-Start-Up Safety Review should involve employees with expertise in process operations and engineering. The employees should be selected based upon their expertise and understanding of the process systems being evaluated.

MECHANICAL INTEGRITY

Written procedures

The Division should establish and implement written procedures to maintain the ongoing integrity of process equipment and appurtenances. These procedures should include a method:

for allowing employees to identify and report potentially faulty or unsafe equipment to record their observations and suggestions in writing

The Division should respond regarding the disposition of the employee's concerns contained in the report(s) in a timely manner.

The Division should provide employees and their representatives access to the written procedures.

Inspection and testing

Inspections and tests should be performed on process equipment

Inspection and testing procedures should follow recognized and generally accepted good engineering practices

The frequency of inspections and tests should be consistent with applicable manufacturer's recommendations and good engineering practices, and more frequently if determined necessary as dictated by operating history.

The Division should have a certification record that each inspection and test has been performed. The certification should identify the date of the inspection; the name of the person who performed the inspection and test, and the serial number or other identifier of the equipment.

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Equipment deficiencies

The Division should correct deficiencies in equipment which are outside acceptable limits defined by the process safety information before further use, or in a safe and timely manner provided means are taken to assure safe operation.

Quality assurance

The Division should assure that, in the construction of new plants and that new, modified, repaired, or fabricated equipment is suitable for the process application for which it will be used.

Appropriate checks and inspections should be performed as necessary to assure that equipment is installed properly and is consistent with design specifications and manufacturer's instructions.

The Division should assure that maintenance materials, spare parts and equipment, meet design specifications and applicable codes.

HOT WORK PERMITS

The Division should develop and implement a written procedure for the issuance of "hot work" permits.

The permit should certify that the applicable portions of the fire prevention and protection requirements have been implemented prior to beginning the hot work operations, indicate the date(s) authorized for hot work; and identify the equipment or facility on which hot work is to be done.

MANAGEMENT OF CHANGE

The Division should establish and implement written procedures to manage changes (except for "replacement in kind") to process chemicals, technology, and equipment, and changes to facilities.

The procedures should assure that the following are addressed prior to any change:

The technical basis for the proposed change

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Impact of change on safety and health

Modifications to operating procedures

Necessary time period for the change

Authorization requirements for the proposed change

Employees involved in the process should be informed of, and trained in, the change in the process prior to its start up.

If a change covered by this subsection results in a change to the process safety information, such information should be appended and/or updated

If a change results in a change to the operating procedures, such procedures should be appended and/or updated.

INCIDENT INVESTIGATION

The Division should establish a written procedure for prompt reporting and investigating every incident which results in or could reasonably have resulted in a major accident.

Incident investigations should be initiated no later than 24 hours following the incident.

An incident investigation team should be established and consist of persons knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons who are qualified to investigate and analyze the incident thoroughly.

A written report should be prepared at the conclusion of the investigation which includes:

Date of incident

Date investigation began

A description of the incident

The factors that contributed to the incident

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Any recommendations resulting from the investigation

The report should be reviewed with all operating, maintenance, and other personnel whose work assignments are within the facility where the incident occurred.

The Division should establish a system to address and resolve the findings promptly and to make recommendations in a timely manner, or take action to prevent a reoccurrence.

Incident investigation reports should be retained for five (5) years.

The Division should prepare a report and, either provide a copy of the report or communicate the contents of the report to all employees and other personnel whose work assignments are within the facility where the incident occurred.

EMERGENCY PLANNING AND RESPONSE

The Division should establish and implement an Emergency Action Plan appropriate to the identified hazards.

EMPLOYEE PARTICIPATION

The Division should develop a written plan of action to ensure employee participation in process safety management which includes:

Employer consultation with employees and their representatives on the conduct and development of the elements of process safety management

Providing employees and their representatives with access to all information required to be developed without regard to possible trade secret status of such information.